



JFW
PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Georgios B. Giannakis; Confirmation No. 1088
Liuqing Yang
Serial No.: 10/796,563
Filed: March 8, 2004 Customer No.: 28863
Examiner: Unknown
Group Art Unit: 2631
Docket No.: 1008-013US01
Title: SPACE-TIME CODING FOR MULTI-ANTENNA ULTRA-WIDEBAND
TRANSMISSIONS

CERTIFICATE UNDER 37 CFR 1.8: I hereby certify that this correspondence is being deposited with the United States Post Service, as First Class Mail, in an envelope addressed to: Commissioner for Patents, Alexandria, VA 22313-1450 on

March 22, 2005

By: Beth M. Lindblom

Name: Beth M. Lindblom

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Mail Stop: Amendments
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Applicant submits the references listed on the attached form PTO-1449. This statement is being filed, to the best of Applicant's knowledge, before the receipt of a first Office Action on the merits.

Applicant has enclosed a copy of each article cited.

Respectfully submitted,

Date: March 20, 2005

Shumaker & Sieffert, P.A.
8425 Seasons Parkway, Suite 105
St. Paul, Minnesota 55125
Phone: (651) 735-1100
Fax: (651) 735-1102

Kent J. Sieffert
By: Kent J. Sieffert
Reg. No.: 41,312



Form 1449* INFORMATION DISCLOSURE STATEMENT IN AN APPLICATION (Use several sheets if necessary)		Docket Number: 1008-013US01		Application Number: 10/796,563	
		Applicant: Georgios B. Giannakis; Liuqing Yang			
		Filing Date: March 8, 2004		Group Art Unit: 2631	
		Examiner Name: Unknown			
U.S. PATENT DOCUMENTS					
Examiner Initial	Document Number	Issue/Document Publication Date	Name	Filing Date If Appropriate	
FOREIGN PATENT DOCUMENTS					
Examiner Initial	Document Number	Publication Date	Country	Translation	
				Yes	No
OTHER DOCUMENTS (Including Authors, Title of Item, Page(s), Vol/Issue No., Publisher, Place of Publication)					
	B. Parr et al., "A Novel Ultra-Wideband Pulse Design Algorithm," IEEE Communications Letter, Vol. 7, No. 5, pp. 219-221, May 2003.				
	J. Romme et al., "On the Power Spectral Density of Time-Hopping Impulse Radio," 2002 IEEE Conference on Ultra-Wideband Systems and Technologies, Wyndham Baltimore Inner Harbor, pp. 241-244, May 2002.				
	M.Z. Win, "Spectral Density of Random UWB Signals," IEEE Communications Letters, Vol. 6, No. 12, pp. 526-528, December 2002.				
	J. Han et al., "A New Ultra-Wideband, Ultra-Short Monocycle Pulse Generator with Reduced Ringing," IEEE Microwave and Wireless Components Letters, Vol. 12, No. 6, pp. 206-208, June 2002.				
	J.S. Lee et al., "New Uniplanar Subnanosecond Monocycle Pulse Generator and Transformer for Time-Domain Microwave Applications," IEEE Transactions on Microwave Theory and Techniques, Vol. 49, No. 6, pp. 1126-1129, June 2001.				
	T.W. Parks et al., "Chebyshev Approximation for Nonrecursive Digital Filters with Linear Phase," IEEE Transactions on Circuit Theory, Vol CT-19, No. 2, pp. 189-194, March 1972.				
	D. Kelly et al., "PulsON Second Generation Timing Chip: Enabling UWB Through Precise Timing," 2002 IEEE Conference on Ultra-Wideband Systems and Technologies, Wyndham Baltimore Inner Harbor, pp. 117-121, May 2002.				

	X. Luo et al., "Designing Optimal Pulse-Shapers for Ultra-Wideband Radios," Journal of Communications and Networks, Vol. 5, No. 4, pp. 344-353, December 2003.
	J.R. Foerster, "The Performance of a Direct-Sequence Spread Ultra-Wideband System in the Presence of Multipath, Narrowband Interference, and Multiuser Interference," 2002 IEEE Conference on Ultra Wideband Systems and Technologies, Wyndham Baltimore Inner Harbor, pp. 87-92, May 2002.
	B.M. Sadler et al., "On the Performance of UWB and DS-Spread Spectrum Communication Systems," 2002 IEEE Conference on Ultra Wideband Systems and Technologies, Wyndham Baltimore Inner Harbor, pp. 289-292, May 2002.
	R.A. Scholtz, "Multiple Access with Time-Hopping Impulse Modulation," Communications on the Move, Conference Record Vol. 2 of 3, MILCOM Conference, Boston, MA, pp. 447-450, 1993.
	L. Yang et al., "Multistage Block-Spreading for Impulse Radio Multiple Access Through ISI Channels," IEEE Journal on Selected Areas in Communications, Vol. 20, No. 9, pp. 1767-1777, December 2002.
	Z. Wang, "Multi-Carrier Ultra-Wideband Multiple-Access with Good Resilience Against Multiuser Interference," 2003 Conference on Information Sciences & Systems, The John Hopkins University, Baltimore, MD, pp. 1-5, March 2003.
	D. Cassioli, et al., "Performance of Low-Complexity Rake Reception in a Realistic UWB Channel," 2002 IEEE International Conference on Communications, New York, NY, pp. 763-767, April 28-May 2, 2002.
	Z. Wang et al., "A Simple and General Parameterization Quantifying Performance in Fading Channels," IEEE Transactions on Communications, Vol. 51, No. 8, pp. 1389-1398, August 2003.
	L. Yang et al., "Analog Space-Time Coding for Multiantenna Ultra-Wideband Transmissions," IEEE Transactions on Communications, Vol. 52, No. 3, pp. 507-517, March 2004.
	I. Bergel et al., "Narrow-Band Interference Suppression in Time-Hopping Impulse-Radio Systems," 2002 IEEE Conference on Ultra Wideband Systems and Technologies, Wyndham Baltimore Inner Harbor, pp. 303-307, May 2002.
	L. Yang et al., "Unification of Ultra-Wideband Multiple Access Schemes and Comparison in the Presence of Interference," The Thirty-Seventh Asilomar Conference on Signals, Systems & Computers, Pacific Grove, CA, pp. 1239-1243, November 2003.
	G. Durisi, et al., "Performance of TH and DS UWB Multiaccess Systems in Presence of Multipath Channel and Narrowband Interference," Procedure of International Workshop on Ultra Wideband Systems, Oulu, Finland, 5 pages, June 2003.

	Z. Wang et al., "Complex-Field Coding for OFDM Over Fading Wireless Channels," IEEE Transactions on Information Theory, Vol. 49, No. 3, pp. 707-720, March 2003.
	A.V. Oppenheim, et al., <i>Discrete-Time Signal Processing</i> , 2 nd Edition, Prentice Hall, Chapter 7, "Optimum Approximations of Fir Filters," pgs. 486-511, 1999.
	FCC Report and Order, <i>In the Matter of Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems</i> , FCC 02-48, pp. 7434-7553, April 2002.
	IEEE P802.15 Working Group for WPAN, <i>Channel Modeling Sub-Committee Report Final</i> , IEEE 802.15-02/368r5-SG3a, pp. 1-40, November 2002.
	L. Yang et al., "Digital-Carrier Multi-Band User Codes for Baseband UWB Multiple Access," Journal of Communications and Networks, Vol. 5, No. 4, pp. 374-385, December 2003.
	M. Hamalainen et al., "On the UWB System Coexistence With GSM900, UMTS/WCDMA, and GPS," IEEE Journal on Selected Areas in Communications, Vol. 20, No. 9, pp. 1712-1721, December 2002.
	L. Zhao et al., "Performance of Ultra-Wideband Communications in the Presence of Interference," IEEE Journal on Selected Areas in Communications, Vol. 20, No. 9, pp. 1684-1691, December 2002.
	S. Zhou et al., "Digital Multi-Carrier Spread Spectrum Versus Direct Sequence Spread Spectrum for Resistance to Jamming and Multipath," IEEE Transactions on Communications, Vol. 50, No. 4, pp. 643-655, April 2002.
	P. Withington, "Impulse Radio Overview," Time Domain Corp., pp. 1-7, downloadable from http://user.it.uu.se/carle/Notes/UWB.pdf .
EXAMINER	Date Considered
*Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.	

Based on Form PTO-FB-A820
(Also form PTO-1449)

Patent and Trademark Office, U.S. Department of Commerce